

REMARKS

On an initial note, Applicant wishes to thank the Examiner for indicating that claims 5-6 and 8-9 include allowable subject matter. Claims 1-20 are currently pending. Claims 11-16 are withdrawn. Claims 3, 7, 10, 17, and 20 have been amended without prejudice. Support for these amendments can be found, for example, at para. [0028] of the Application. The Applicant submits that these minor amendments and corrections herein are made without prejudice as to patentability, including the doctrine of equivalents, and no new matter has been added. The Commissioner is authorized to charge or credit any fees to the deposit account of Baker Hughes, 02-0249 (attorney docket number 104-30465).

Claims 1-20 Should Be Pending

Although the Examiner indicated in block 4 of the Disposition of Claims section of paper No. 20060627, the Examiner has apparently inadvertently overlooked newly added claims 17-20 filed in conjunction with the Response dated January 6, 2006, to Restriction Requirement dated December 13 2005 (paper No. 20051206), in which Applicant requested the Examiner add claims 17-20 to the Group I claims. Applicant resubmits this request.

Claims 1-4, 7, 10, and 17-20 are not Obvious.

The Examiner rejected Claims 1-2, 4, 7 and 10 under 35 U.S.C. § 103(a) as being obvious over Renberg, Jr., U.S. Patent No. 3,235,823 (hereinafter "Renberg Jr."), disclosing a conventional three-phase transformer, in view of Murad, U.S. Patent No. 4,128,871 (hereinafter "Murad"), describing a high-voltage DC power supply including a conventional high-voltage transformer and high-voltage rectifier mountable on the housing of the transformer; and Bennon et al. [sic], U.S. Patent No. 3,621,426 (hereinafter "Bennon et al."), describing a conventional transformer having a high-voltage bushing assembly including condenser section mounted in a separate bushing compartment attached to a sidewall portion of the transformer tank and electrically connected to the transformer through separate openings in the transformer tank and bushing compartment. The Applicants respectfully traverse the rejection.

The Applicant's invention defined by the claims includes a transformer 13, includes at least one but preferably a plurality of typically vertically oriented magnetic core elements 28 and primary and secondary windings 31, 32, positioned within a transformer chamber 25 of a transformer tank or housing 20 which function typically to, for example, provide a step-up voltage to a motor 19 or other are consuming device. The transformer 13 also includes a filter 17, generally configured as a low pass filter, having at least one but preferably a plurality of inductors 21 and can include a plurality of capacitors 22 associated with the winding(s) to filter harmonics created by, for example, a variable speed drive 15 or other input device. In an embodiment where the transformer 13 is, for example, a multi-phase transformer, each of the phases of the transformer 13 can include at least one of the inductors 21 connected, for example, between a bushing, e.g., bushing 33, connected to the transformer tank 20 and the primary winding 31 associated with that individual phase. The inductor(s) 21 are advantageously positioned within the transformer chamber 25, itself. The transformer chamber 25 of the transformer tank 20 includes or contains a dielectric fluid 26, such as, e.g., an insulating dielectric oil, for cooling the transformer internal components, *i.e.*, the core 28, the primary and secondary windings 31, 32; and due to the positioning of the inductors 21 advantageously also simultaneously cools the inductors 21. This is an important novel and nonobvious feature that overcomes problems related to environmental exposure of the inductors 21 and environmental degradation due to the heat generated in the inductor coil of the filter arrangement.

Renberg Jr. describes a conventional high-voltage, high-power transformer including various conventional transformer components.

Renberg Jr. does not disclose, teach, or suggest (1) an inductor positioned within a transformer chamber and electrically connected to the primary winding for filtering, as featured in claim 1; or (2) a plurality of inductors positioned in the chamber of a transformer tank, at least partially immersed in the dielectric cooling liquid, and electrically connected between a primary bushing and corresponding primary winding, and a plurality of capacitors within a capacitor bank each electrically connected to one or more of the inductors as featured in claim 7.

Murad describes a high-voltage DC power supply including a transformer (30) and a rectifier unit (10) positioned between high-voltage AC power bushings (32) of the transformer (30) to provide high-voltage DC power. *See* Murad Figure 1. The rectifier unit (10) is

connected to the bushings (32) via AC connecting straps (33) at terminals (1) and (2), respectively. *See* Murad Figure 1. The rectifier unit (10) includes legs (27, 28), which provide the means for mounting the rectifier unit (10) atop the transformer (30) and forming an airspace (36) between the bottom of the rectifier unit tank (26) and the top of the transformer housing (30). *See* Murad Figure 3. The rectifier unit (10) contains a series connected inductor (L1) connected between the DC output of the rectifier unit (10) and the DC output of a full wave rectifier bridge formed by diode assemblies (D1, D2, D3, D4). *See* Murad Figure 2. The inductor (L1) along with diode assemblies (D1, D2, D3, D4) are positioned within the housing of rectifier unit (10), and *not* within the housing of the transformer (30). *See* Murad Figure 2.

Murad does not disclose, teach, or suggest positioning inductor (L1) within the transformer housing (30). The inductor (L1) identified by the Examiner is clearly positioned in a rectifier unit (10), which is separate from and mounts atop the conventional transformer (30). Nor would housing the inductors featured in claim 1 and claim 7 in a housing separate from the transformer disclose, teach, or suggest housing the inductor (L1) inside the transformer housing, itself, even if this would not destroy the Murad invention. Further, the inductor (L1) is electrically connected to the full wave rectifier bridge formed by diode assemblies (D1, D2, D3, D4) and not to the primary winding as featured, for example, in claims 2, 4, 7, and 17.

Bennon et al. discloses a conventional liquid cooled transformer (10) having a tank (12), cooling liquid (20) contained therein, and a single high-voltage bushing assembly (50) mounted in a separate bushing compartment (80) attached to a sidewall portion of the transformer tank (12) to aid in reducing the tank height of the transformer (10). *See, e.g.*, Bennon et al., Figure 2, col. 4, lines 53-56, and col. 3, lines 18-23. The high-voltage bushing assembly (50) is electrically connected to the transformer (10) through a separate opening in the bushing compartment (80) which is oriented with opening (82) in the transformer tank (12). *See, e.g.*, Bennon et al., Figure 2. The high-voltage bushing (50) includes, among other conventional components, insulating portions (64) and (66) which surround a condenser section (not labeled) constructed of a plurality of capacitor plates or foils *for more uniformly distributing electrical stresses across the bushing (50)*. *See* Bennon et al., col. 3, line 71 to col. 4, line 16.

Bennon et al. does not disclose, teach, or suggest a capacitor(s) *electrically connected* to an inductor(s) much less a capacitor(s) electrically connected to an inductor(s) positioned within

a transformer tank (12) as featured in, for example, claims 3, 7, 10, or 20; a capacitor(s) positioned so that the combination of the inductor(s) and the capacitor(s) form a low pass filter(s) as featured in the claims 3, 10, and 20; or a capacitor bank as featured in claims 7-10 and 20. As noted above, the condenser section (not labeled) merely functions to help distribute electrical stresses across the bushing (50) and are not disclosed or taught as capable of filtering out unwanted, e.g., harmonic, frequencies.

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *See* MPEP 2143. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *See* MPEP 706.02(J). "The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *See In re Fritch*, 23 U.S.P.Q. 2d 1780, 1784 (Fed. Cir. 1992). The Applicant respectfully submits that none of the cited references suggest any explicit or implicit motivation or desire to combine the cited references to accomplish Applicant's present invention. Further, Applicant respectfully submit that neither of the cited references is pertinent to the particular problems with which the Applicant was concerned.

No Suggestion or Motivation to Combine or Modify References

There are three possible sources for a motivation to combine references: "the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *See* MPEP § 2143.01. Renberg Jr. was concerned with forming a high-voltage, high-power transformer that could be readily shipped from the factory to a destination point. *See* Renberg Jr., col. 1, lines 49-50. Murad was concerned with forming a high-voltage DC power supply. *See* Murad, abstract. Bennon et al. was concerned with forming a shell-form transformer having a reduced height without the need for sectionalizing the tank or mounting the magnetic core winding assembly such that force-cooling is required for proper cooling. *See* Bennon et al., col. 1, lines 36-43. Further, neither Renberg Jr., Murad, nor Bennon et al. when taken "as a whole" were concerned with or would solve the Applicant's problems. Thus, the combined teachings of the cited references when properly taken for what each teaches "as a

whole," knowledge of one of ordinary skill in the art, nature of the problem to be solved do not provide a suggestion or motivation to combine the cited patent documents.

No Reasonable Expectation of Success

Applicants respectfully submit that the second element of a *prima facie* case for obviousness is also lacking because there must be, and there is not in this present case, a reasonable expectation of success. Applicant respectfully submits that combining Renberg Jr., Murad, and Bennon et al. would merely produce the Murad invention and would not produce the Applicant's invention because Renberg Jr. merely teaches a transformer, Murad merely teaches a rectifier circuit (10) including an inductor (L1) and diode assemblies (D1, D2, D3, D4) to produce DC power, and Bennon et al. merely teaches a condenser section of a single high-voltage bushing 50 that functions to help distribute electrical stresses across the high-voltage bushing (50).

The References Do Not Teach or Suggest All Claim Limitations

Applicant respectfully submits that the third element of a *prima facie* case for obviousness, which requires all claim limitations be taught or suggested, is also lacking. For example, with respect to claim 1, as stated above, neither reference discloses a structure having an inductor for filtering positioned within a transformer tank. Additionally, neither reference discloses, teaches, or suggests a structure whereby capacitor(s) are electrically connected to the inductor(s) positioned within a transformer tank as featured in claims 7. Accordingly, independent claims 1 and 7 have been shown to be novel, nonobvious, and define over the cited references. Also, correspondingly, dependent Claims 2-6, 10, and 17-20, have thus likewise been shown to be allowable.

The dependent claims further have independent novelty and are nonobvious. For example, neither reference discloses, teaches, or suggests a structure including an inductor electrically connected between a bushings and a primary winding for filtering harmonics created by a variable speed drive, as featured in claim 2. Neither reference discloses, teaches, or suggests a structure including a capacitor electrically connected to an inductor for filtering located in a transformer tank and positioned so that the combination of the inductor and the capacitor form a low pass filter, as featured in claims 3 and 10. Neither reference discloses, teaches, or suggests a structure wherein a primary winding and inductor for filtering are

positioned within the same housing or tank and are at least partially immersed in the same cooling liquid, as featured in claim 4. Neither reference discloses, teaches, or suggests a structure including a plurality of capacitors each electrically connected to one or more inductors for filtering as featured in claim 17. Neither reference discloses, teaches, or suggests a structure including a combination of inductors positioned in a transformer tank and capacitors form a three-phase low pass filter arrangement as featured in claim 20. Note, claims 18 and 19 include the same subject matter the Examiner indicated to be allowable with respect to claims 8 and 9.

Please note, in commenting upon the references and in order to facilitate a better understanding of the differences that are expressed in the claims, certain details of distinction between the references and the present invention have been mentioned, even though such differences do not appear in all of the claims. It is not intended by mentioning any such unclaimed distinctions or making any amendments herein to create any implied limitations in the claims. Not all of the distinctions between the cited patent documents and Applicant's present invention have been made by Applicant. For the foregoing reasons, Applicant reserves the right to submit additional evidence showing the distinctions between Applicant's invention to be novel and nonobvious in view of the cited patent documents.

The foregoing remarks are intended to assist the Examiner in re-examining the application and in the course of explanation may employ shortened or more specific or variant descriptions of some of the claim language. Such descriptions are not intended to limit the scope of the claims; the actual claim language should be considered in each case. Furthermore, the remarks are not to be considered to be exhaustive of the facets of the invention that render it patentable, being only examples of certain advantageous features and differences.

CONCLUSION

In view of the remarks set forth herein, Applicant respectfully submits that the application is in condition for allowance. Accordingly, examination of the application and the issuance of a Notice of Allowance in due course are respectfully requested.

Respectfully submitted,


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